

401 KAR 61:010. Existing incinerators.

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
Department for Environmental Protection
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 13.082, 224.033

Necessity and Function: KRS 224.033 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides standards of performance for existing incinerators.

Section 1. Applicability.

The provisions of this regulation shall apply to each affected facility which means each incinerator with a capacity of 2.5 cubic feet or greater commenced before the classification date defined below.

Section 2. Definitions.

As used in this regulation, all terms not defined herein shall have the meaning given them in 401 KAR 50:010.

- (1) "Incinerator" means any furnace and appurtenances thereto used in the process of burning waste for the primary purpose of removing the combustible matter from the waste.
- (2) "Auxiliary fuel" means a substance burned in an incinerator to supply additional heat to attain temperature sufficiently high to dry and ignite the waste and to maintain ignition of the waste.
- (3) "Classification date" means:
 - (a) August 17, 1971 for incinerators with a charging rate of more than fifty (50) tons/day.
 - (b) April 9, 1972 for incinerators with a charging rate of fifty (50) tons/day or less.

Section 3. Standard for Particulate Matter.

- (1) No person shall cause, suffer, allow, or permit the emission produced by the incineration of any substance other than sawdust, wood chips, or bark which:
 - (a) Is greater than twenty (20) percent opacity; or
 - (b) For those incinerators with charging rate greater than or equal to 500 lb/hr, exceeds 0.20 grains of particulate matter per standard cubic foot of dry flue gas corrected to twelve (12) percent carbon dioxide excluding the contribution of carbon dioxide from auxiliary fuel.
- (2) No person shall cause, suffer, allow or permit the emission produced by the incineration of sawdust, wood chips, or bark which:
 - (a) is equal to or greater than forty (40) percent opacity (for the purposes of 401 KAR 50:055, Section 2(4) and (5), thirty (30) consecutive minutes shall be allowed for startup and thirty (30) consecutive minutes shall be allowed for shutdown); or
 - (b) Exceeds 0.21 grains of particulate matter per standard cubic foot of dry flue gas corrected to twelve (12) percent carbon dioxide excluding the contribution of carbon dioxide from auxiliary fuel.

Section 4. Monitoring of Operations.

The owner or operator of any incinerator of more than forty- five(45) metric tons per day charging rate (fifty (50) tons per day) subject to the provisions of this regulation shall record the daily charging rate and hours of operation.

Section 5. Test Methods and Procedures.

- (1) Except as provided in 401 KAR 50:045, performance tests used to demonstrate compliance with Section 3 shall be conducted according to the following methods (filed by reference in 401 KAR 50:015):
 - (a) Kentucky Method 50 for the concentration of particulate matter and the associated moisture content;
 - (b) Reference Method 1 for sample and velocity traverses;
 - (c) Reference Method 2 for velocity and volumetric flow rate; and
 - (d) Reference Method 3 for gas analysis and calculations of excess air using the integrated sample technique.
- (2) For Kentucky Method 50 the sampling time for each run shall be at least sixty (60) minutes and the minimum sample volume shall be 0.85 dscm (30.0 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the department.
- (3) If a wet scrubber is used, the gas analysis sample shall reflect flue gas conditions after the scrubber, allowing for carbon dioxide absorption by sampling the gas on the scrubber inlet and outlet sides according to either the procedure under paragraphs (a) to (c) of this subsection or the procedure under paragraphs (a), (b) and (f) of this subsection as follows:
 - (a) The outlet sampling site shall be the same as for the particulate matter measurement. The inlet site shall be selected according to Reference Method 1, or as specified by the department.
 - (b) Randomly select nine (9) sampling points within the cross section at both the inlet and outlet sampling sites. Use the first set of three (3) for the first run, the second set for the second run, and the third set for the third run.
 - (c) Simultaneously with each particulate matter run, extract and analyze for CO₂ an integrated gas sample according to Reference Method 3, traversing the three (3) sample points and sampling at each point for equal increments of time. Conduct the runs at both inlet and outlet sampling sites.
 - (d) Measure the volumetric flow rate at the inlet during each particulate matter run according to Reference Method 2, using the full number of traverse points. For the inlet make two (2) full velocity traverses approximately one (1) hour apart during each run and average the results. The outlet volumetric flow rate may be determined from the particulate matter run (Reference Method 5).
 - (e) Calculate the adjusted CO₂ percentage using the equation in Appendix A to this regulation.
 - (f) Alternatively, the following procedures may be substituted for the procedures under paragraphs (c), (d) and (e) of this subsection:
 1. Simultaneously with each particulate matter run, extract and analyze for carbon dioxide, oxygen and nitrogen an

integrated gas sample according to Reference Method 3, traversing the three (3) sample points and sampling for equal increments of time at each point. Conduct the runs at both inlet and outlet sampling sites.

2. After completing the analysis of the gas sample, calculate the percentage of excess air (%EA) for both the inlet and outlet sampling sites using Equation 3-1 in Reference Method 3.
3. Calculate the adjusted CO₂ percentage using the equation in Appendix B to this regulation.
4. Particulate matter emissions expressed in g/dscm, shall be corrected to twelve (12) percent CO₂ by using the equation in Appendix C to this regulation.

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APPENDIX A TO 401 KAR 61:010
EQUATION FOR ADJUSTED CO₂ PERCENTAGE

$$(\%CO_2)_{adj} = (\%CO_2)_{di} (Q_{di}/Q_{do})$$

Where:

(%CO₂)_{adj} is the adjusted CO₂ percentage which removed the effect of CO₂ adsorption and diffusion of air;

(% CO₂)_{di} is the percentage of CO₂ measured before the scrubber, dry basis;

Q_{di} is the volumetric flow rate before the scrubber, average of two runs, dscf/min, using Reference Method 2; and

Q_{do} is the volumetric flow rate after the scrubber, dscf/min, using Reference Methods 2 and 5.

APPENDIX B TO 401 KAR 61:010
EQUATION FOR ADJUSTED CO₂ PERCENTAGE

$$(\%CO_2)_{adj} = (\%CO_2)_{di} \frac{100 + (\%EA)_i}{100 + (\%EA)_o}$$

Where:

- (%CO₂)_{adj} is the adjusted outlet CO₂ percentage;
- (%CO₂)_{di} is the percentage of CO₂ measured before the scrubber, dry basis;
- (%EA)_i is the percentage of excess air at the inlet; and
- (%EA)_o is the percentage of excess air at the outlet.

APPENDIX C TO 401 KAR 61:010
EQUATION FOR CORRECTING PARTICULATE MATTER EMISSIONS

$$C_{12} = \frac{12c}{\%CO_2}$$

Where:

C_{12} is the concentration of particulate matter corrected to twelve percent CO_2 ;

C is the concentration of particulate matter as measured by Reference Method 5;

$\%CO_2$ is the percentage of CO_2 as measured by Reference Method 3, or when applicable, the adjusted outlet CO_2 percentage as determined by Section 5(3)(c).